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HYPOTHERMIA AND COLD WATER SURVIVAL

INTRODUCTION

Hypothermia is a silent, and often underestimated killer. This is especially true when we feel warm and downplay the quick onset of hypothermia, or when falling into freezing cold water, when the body loses heat very fast. Knowing a few facts about hypothermia and cold water survival will help you survive longer or offer the correct assistance to a hypothermia victim.

HYPOTHERMIA FACTS

Hypothermia is the decrease in deep body temperature. When exposed to low temperature, the body loses heat through the skin. An intense shivering follows, in an effort to increase the body's temperature. Eventually, when the deep body temperature drops below 85 F (30 C), vital functions cease and the person dies. People's ability to survive hypothermia varies greatly, and personal factors such as body fat, body size, and age, play crucial roles. Old people and small children lose heat more rapidly and are most sensitive to hypothermia.

Not all parts of the body lose heat at the same rate. The head, neck, side of the chest and the groin area lose heat more rapidly. The natural instinct to embrace yourself when cold is a healthy one. It minimizes exposure of those areas to cold air or water.

WHAT TO DO

Working on Land

Air temperature alone is not enough to judge the cold hazard of a particular environment. Hypothermia cases often develop in air temperatures between 30-50 degrees Fahrenheit. When you figure in such factors as wind chill, the effective temperature can be significantly lower.

Early warnings of hypothermia are:

- Uncontrollable shivering and the sensation of cold;
- The heartbeat slows and sometimes becomes irregular, the pulse weakens, and the blood pressure changes;
- Fits of shivering, vague or slurred speech, memory lapses, incoherence, or drowsiness are some symptoms which may occur; and
- Other symptoms which may be seen before unconsciousness are cool skin, slow, irregular breathing, low blood pressure, apparent exhaustion, and inability to get up after a rest.

Working on Iced-over Ponds

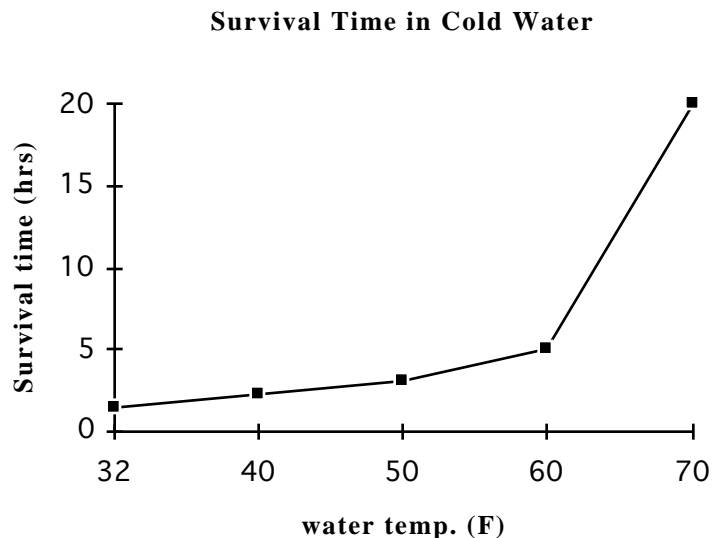
Under some conditions, spill response may require cleanup personnel to work on ponds or lakes that have been iced-over. Generally, working over iced-over ponds and lakes should be avoided whenever possible. Negligence and unsafe practices when working on thin ice (literally!) may cause workers to break the ice and fall into the freezing water. There are no OSHA standards for working on iced-over ponds and lakes, but the general rule of thumb (advisory in a Minnesota Newspaper) is that ice layer thinner than 6 inches is unsafe for people, and thinner than 12 inches is unsafe for small vehicles. In addition, obvious cracks and uneven ice layer indicate thawing and danger. Local experts should be consulted on this topic, as they know the area and are familiar with the problem.

Preparing in advance for working over iced over ponds will help greatly if an accident does occur. Use the buddy system (never work alone), have the persons working on the ice tethered, so they may be pulled out if they fall, and have a rescue team ready with ropes, poles and a light ladder. Use the expertise of the local folks to mark areas where the ice is thinner (e.g., over a spring) and simply avoid taking risks. The ice may break unexpectedly.

Cold Water Survival

The quickest and most dangerous onset of hypothermia is caused by immersion in cold water. The following will address cold water induced hypothermia.

When falling into cold water, the water temperature is the most important factor that determines survival. The graph below shows survival time of the "average person", dressed in street clothing, in different water temperatures.



1. Before getting in the water

Several simple precaution will go a long way toward increasing your chances of survival:

- Wear a life jacket. Life jacket will not only prevent you from drowning. It will slow down the loss of body heat by providing an insulating layer and by keeping part of your body, and especially the head, out of the water.
- Wear your Mustang® float-coat or coverall. The float-coat, when properly worn, will provide you with almost as much thermal protection as the coverall. Either one will more than double your survival time, as compared to wearing regular clothing and standard PFD (Personal Flotation Device).
- Make sure you know where flotation devices are located, and grab something that will keep you afloat and out of the water. You want to minimize water contact with your body to the greatest degree possible.
- Know where the survival suits are located, and if at all possible hop into one before going into the water.

2. While in the water

The boat sank. You are in the water. Don't panic! Screaming when no one can hear you, or flopping about in the water, will quicken heat loss. Keep cool, (no pun intended) and consider the following:

- *Should I get out of the water?* YES! By all means. Heat loss is 25 times faster in water than in air. Use anything you can to get out of the water. Keeping half your body out of the water is much better than leaving it in to rapidly lose heat.
- *Should I swim to keep warm?* NO! Swimming will cause blood to flow to the extremities, and will bring about quicker loss of core body temperature. It was found that swimming could increase heat loss by 30-40%. Swim only if it will help you get out of the water.
- *How far can I swim?* It depends on you and on the environment. In water at 50 °F, an average person, wearing light clothing and standard PFD, can swim less than a mile before being overcome by hypothermia. It is a good idea to swim if it can get you out of the water. However, if the shore is far away you may not make it. It is very much a personal decision, based on your strength and swimming ability, and the distance to safety.
- *What if I don't have a PFD?* Try to find one. Anything that will keep you out of the water will do. If nothing could be found keep your head out of the water by treading water slowly. You will lose less heat that way than when "drown proofing" i.e. restful floating with lungs full of air, raising the head every few seconds to breathe. Drown proofing was found to be the fastest way to lose heat of all the behaviors studied.

- *What behavior will increase survival time?* HELP (Heat Escape Lessening Posture). Embrace your PFD and hold your arms tightly against the side of the chest, and press the thighs together and raise them toward the groin area. In this embryonic position you minimize heat loss from the most sensitive areas. This posture is said to increase survival time by 50%. It is best performed when you have a traditional PFD. Having a float coat only, with a lower center of buoyancy, may interfere with that position. You may also huddle with other survivors, keeping close to minimize heat loss.

- *Do PFD's differ in their thermal protection?* Absolutely. A study done by the University of Victoria found that PFD's could be divided into three major groups:

1. Poor thermal protection: Loose fitting PFD.
2. Fair thermal protection: Close fitting foam vests, and garment type flotation jackets. Using those will increase your survival time by 50-70%.
3. Good thermal protection: Mustang's float-coats and coveralls fall in that category. Properly worn, they will more than double your survival time.

A fourth category is the immersion (survival) suit. Using an immersion suit will extend your survival time to many hours, possibly days.

- *Will drinking alcohol keep me warmer?* NO! It will give you a false sense of warming while actually increasing your heat loss. Alcohol causes blood vessel to dilate, thus increasing blood flow to the peripheries, resulting in quicker heat loss to the body core. In addition, alcohol will exacerbate poor judgment, a well known symptom of hypothermia .

TREATING VICTIMS OF HYPOTHERMIA

Treatment of hypothermia victims varies with severity. Get medical assistance if possible, and in the meantime put the victim in a dry warm place, take wet clothing off, and apply gentle warming to the head, neck, and trunk. Do not attempt to warm the extremities. It may actually draw blood from the deep body and have a reverse effect. Never put the victim in a hot bath. The victim may be warmed by body contact with one or two warm, healthy persons. If conscious, he may be given a warm sweet drink (not diuretic coffee or tea). If unconscious, warm gently, monitor for vital signs, and get medical attention urgently. Hypothermia should be treated as a medical emergency.

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